

Digital citizenship in teacher education – Exploring conceptualizations in a postdigital era

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Abstract

In a postdigital era, an increasingly important dimension of citizenship is digital citizenship, which is reflected for instance by digital civic engagement, fake news, and disinformation, not least during the Covid-19 pandemic. Teacher education (TE) prepares student teachers for the fostering of citizens in K-12 schools, and various conceptualizations of digital citizenship appear in educational research that could inform TE practice. This paper explores two common conceptualizations of digital citizenship in educational research, Ribble's nine elements of digital citizenship and Choi's four-category model, and critically examines how these reflect digital citizenship in a postdigital era, including potential implications for TE. The paper shows that neither conceptualization fully reflects digital citizenship in a postdigital era although Choi's model mirrors some characteristics, for instance a blurredness between binaries such as "online" and "offline", and a multi-faceted understanding of citizenship and digital technologies. Critically analyzing digital citizenship is important as the conceptualizations informing TE may impact the preparation of future teachers to teach for digital citizenship in a postdigital era.

Keywords

Digital citizenship, Postdigital, Teacher education, Networked learning

Introduction

In a postdigital era (Jandrić et al., 2018) digital technologies place new demands on citizenship through the blurred boundaries between human and non-human entities (Burbidge, Briggs & Reiss, 2020), the physical and the digital, technologies, and social networks (Frau-Meigs, O'Neill, Soriani, & Tomé, 2017), which can be referred to as *digital citizenship*. Examples of why digital citizenship is important include among others the impact of digital technologies on civic engagement (Cho, Byrne, & Pelter, 2020), disinformation (Frau-Meigs et al., 2017), post-truth politics in the context of social media networks (Hasen, 2020), digital surveillance (Colaresi, 2020), artificial intelligence (Burbidge et al., 2020), and feedback loops ("echo chambers"; Noveck & Cerf, 2020), all of which place new demands on citizenship. A case in point is the recent Covid-19 conspiracy theories on social media, which have been linked to increasing radicalization of beliefs and social norms, including actions beyond social media (Dow et al., 2021).

Teacher education (TE) prepares student teachers for the fostering of democratic citizens in K-12 schools (cf. Swedish National Agency for Education, 2018) which, globally, are increasingly characterized by digital technologies such as hardware, software, and infrastructure, changing the conditions for teachers' work (Starkey, 2020). Given the new demands placed on citizenship in a postdigital era and teachers' work fostering democratic citizens, digital citizenship also concerns TE. As education in Swedish K-12 schools is to be "based on scientific grounds and proven experience" (Swedish National Agency for Education, 2018, p. 4), teacher educators (including student teachers and teachers) look to educational research for support. Among the different conceptualizations of digital citizenship in education (see Heath, 2018), Ribble's nine elements of digital citizenship and Choi's four-category model are common and thus likely to be considered in TE. As the ways digital citizenship is conceptualized in TE may impact future teachers' preparation for the fostering of democratic citizens in K-12 schools, the purpose of this paper is to explore Ribble's and Choi's conceptualizations of digital citizenship, critically examining how these conceptualizations reflect the demands placed on citizenship in a postdigital era. Lastly, the paper highlights potential implications for TE.

A postdigital era

A postdigital era is characterized among others by the blurred boundaries described above between human and non-human entities, the physical and the digital, technologies, and social networks. The *post* does not refer an

“after-the-digital” (Taffel, 2016) but a critical approach to technology, society, and grand narratives which often follow a specific trajectory of technology development. This can be contrasted with the postdigital, multi-faceted understanding of digital technologies where a pluralism of perspectives is possible even when seemingly in conflict. Ontologically, instead of positioning the digital as different from “traditional” practices, the digital is considered *embedded* in social, economic, and political contexts whereby people and society are shaped directly and indirectly (Cramer, 2014; Knox, 2019). Therefore, the postdigital is incompatible with binary oppositions such as online-offline and digital-material, which in fact are viewed as detrimental (Networked Learning Editorial Collective [NLEC], 2021). The descriptions above reflect the influence from critical philosophy of technology, science and technology studies, and critical posthumanism, but the postdigital also draws on critical pedagogy in seeking to “actively participate in its [the world] development and to enable the widest spheres of society to participate as well” (Jandrić, 2021, p. 29).

Between networked learning (NL) and the postdigital, there are overlaps given the focus on entanglements of humans and technologies, primarily digital technologies, rooted in critical and emancipatory educational traditions (NLEC, 2021). Among the different definitions of NL (Gourlay et al., 2021), this paper uses the following:

Networked learning involves processes of collaborative, co-operative and collective inquiry, knowledge-creation and knowledgeable action, underpinned by trusting relationships, motivated by a sense of shared challenge and enabled by convivial technologies. Networked learning promotes connections: between people, between sites of learning and action, between ideas, resources and solutions, across time, space and media. (NLEC, 2021, p. 320)

This paper broadly recognizes the points made by de Laat and Bonderup Dohn (2019) that while the postdigital and NL are compatible in many ways, they are not necessarily the same. de Laat and Bonderup suggest that one way in which NL transcends the postdigital is a strive to go beyond formal education settings, referring to Jandrić and colleagues’ (2018) seminal publication on the postdigital on which this paper draws.

In contrast, this paper argues that the postdigital emphasis on *embeddedness* of digital technologies reflects how digital citizenship can be non-linear and interrelated with the material world (cf. Choi, 2016) in ways that include contexts outside of education, which are important for young people’s citizenship formation (Olson, Fejes, Dahlstedt & Nicoll, 2014). Moreover, NL practices emphasize connectedness where teachers take a step back and students experience learning primarily through collaboration and cooperation (McConnell et al., 2012; cf. Jones, 2015). However, as different conceptualizations of digital citizenship could impact future teachers’ preparation to teach for digital citizenship and, in turn, K-12 pupils’ citizenship formation, this paper stresses the importance that teacher educators’ (and teachers’) practices be informed in the context of digital citizenship. This may require teacher educators and teachers to play a more active part than has often been described in NL literature, which is not without recent examples of citizenship discussions although the focus has been higher education broadly (e.g., Nørgård, Mor & Bengtsen, 2019) and not TE specifically. In this regard, the paper, although it has a postdigital focus, could contribute to informing NL design and practice in the context of digital citizenship in TE.

Citizenship beyond the nation-state

While citizenship over time has been widely debated in social science, few shifts occurred until a broadened understanding of citizenship emerged at the end of the 20th century (Banks, 2008; Yuval-Davis, 1997). Previously, Marshall’s (1950) triadic conception of citizenship was long influential, which described the relation between citizens and nation-states in terms of elements: civil rights (e.g., the right to justice), political rights (e.g., the right to political participation), and social rights (e.g., the right to education).

Toward the end of the 20th century, criticism increasingly challenged the Marshallian conception and, increasingly, scholars embraced a broader understanding of citizenship focusing on *dimensions*. For example, following migration flows and globalization, people may hold multiple citizenships, be refugees, or identify in ways that do not solely reflect the nation state of residence, which is why some scholars argue for multicultural and transformative citizenship (Banks, 2008), global citizenship (e.g., Andreotti, 2006), and cosmopolitan citizenship (Osler & Starkey, 2018). Another example is Yuval-Davis’ (1997) focus on citizenship and gender where citizens are collective members of different sub-, cross-, and supra-national groups. These examples focus on dimensions, for instance identity and culture, where citizenship becomes something individuals both have and do (van Gunsteren 1998/2018). This last point is important; for example, having citizenship can result in

privileges that impact how citizens do citizenship, which is why broadened conceptions of citizenship must be considered alongside more “traditional” approaches (Choi, 2016).

In a postdigital era (Jandrić et al., 2018), or assuming an NL perspective foregrounding digital networks (Jones, 2015), digital citizenship is an increasingly important dimension of citizenship (Carretero, Vuorikari & Punie, 2017; Choi, 2016; Frau-Meigs et al., 2017). Referring to digital citizenship could seem incompatible with the embeddedness of the postdigital and its skepticism of binary oppositions, and therefore a valid question is why not use the term *postdigital* citizenship. With its own body of literature, digital citizenship serves to draw attention to questions concerning citizenship in relation to digital technologies, referring to one of many interrelated dimensions of citizenship which are not mutually exclusive; for example, it is possible to discuss global citizenship, digital citizenship, and gender. In this way, *digital* citizenship signals that there is something to talk about when it comes to citizenship similar to the way *post* signals that there is something to talk about when it comes to the digital (cf. Sinclair & Hayes, 2019).

Conceptualizing digital citizenship

As a field, digital citizenship is messy. It lacks a seminal definition (Frau-Meigs et al., 2017) and draws interest from many directions, for instance various academic disciplines (as reflected by recent literature reviews, e.g., Jørring, Valentim & Porten-Cheé, 2018), supranational organizations such as the European Union (e.g., Carretero et al., 2017), and non-government organizations (e.g., International Society for Technology in Education, 2019). Also creating difficulty to survey the field of digital citizenship are closely-related concepts such as networked citizenship (e.g., Lokot, 2020), and studies that feature digital citizenship but without explicitly stating so (Heath, 2018).

Broadly, conceptualizations of digital citizenship commonly include the use of technologies to participate in society in relation to knowledge, skills, attitudes, and behaviors. For example, Lindgren defines digital citizenship as “opportunities and resources ... to participate online in society and politics ... a combination of having access to the tools of participation, as well as having the right skills or literacy with which to use them” (2017, p. 147). This definition reflects the broadened understanding of citizenship as a combination of having (opportunities, access, skills, literacy) and doing (participate, use).

In analyzing conceptualizations of digital citizenship, several scholars have highlighted three categories of approaches (e.g., Choi & Cristol, 2021; Heath, 2018; Jørring et al., 2018). The first category is *unidimensional*, characterized by the impact of the discipline (e.g., education, new media, political science) in relation to the specific aspect to be foregrounded, which in education often translates into an ideal type of citizen through a normative focus on responsible technology use. The second category is *multidimensional*, focusing on several aspects of digital citizenship, which tend to emphasize an ideal type of citizen linked to the use of technologies for participation in society, for instance information retrieval and online participation. While also multidimensional, the last category is characterized by *critical, radical, and social-justice oriented approaches* to digital citizenship, for example highlighting power and social inequalities in relation to marginalized groups, which rejects the notion of one ideal type of citizen and instead highlights a pluralism of digital citizenship.

In education, some conceptualizations of digital citizenship are more commonly referred than others. Ribble’s unidimensional approach defines digital citizenship as “the norms of appropriate, responsible behavior with regard to technology use” (2015, p. 15). In contrast, Mossberger, Tolbert, and McNeal’s multidimensional approach include aspects linked to participation, characterized by frequent technology use “for political information to fulfill their [citizens’] civic duty, and ... at work for economic gain” (2007, p. 2). Some multidimensional approaches bridge the two above by focusing on both norms and civic engagement (e.g., Jones & Mitchell, 2016). Others argue that neither of these approaches is sufficient to capture what digital citizenship means and advocate for critical approaches in line with the third category described above (e.g., Choi, 2016), for example focusing on power hierarchies in technology-rich environments (cf. Heath, 2018). Also commonly referred in educational research are European Union publications on digital citizenship, such as “DigComp” (Ferrari, 2013), “DigComp 2.1” (Carretero et al., 2017), “DigCompEdu” (Redecker, 2017), and *Digital Citizenship Education* (Frau-Meigs et al., 2017), which link digital citizenship for instance to work, lifelong learning, participation, and responsibility reflected by the European Commission’s (2021) goals for 2030.

While conceptualizations of digital citizenship in educational research often focus on responsible technology use and (political) participation, these are only some aspects of digital citizenship. Therefore, there is a need for research to cover a larger part of the digital citizenship continuum, including critical approaches (Heath, 2018), which this paper addresses by critically examining two common conceptualizations of digital citizenship in a

postdigital era, promoting a discussion of educational matters in ways that reflect the embeddedness of digital technologies in society (cf. Knox, 2019).

Digital citizenship formation in TE: Three arenas to consider

In TE, teacher educators prepare student teachers to teach for citizenship. In this context, citizenship formation applies to several levels or “arenas”: higher education as a place of ideas and resources relating to citizenship, TE institutions as places of preparation for student teachers to teach for citizenship, and K-12 schools as places for student teachers’ practical work placement and future careers.

First, higher education is an important arena for citizenship formation (Bryer, 2014; United Nations World Declaration on Higher Education for the Twenty-First Century: Vision and Action, 1998). Teacher educators and student teachers engage with traditions of thought that can promote and inhibit new ideas when it comes to citizenship and the development of resources to “bring about its flourishing in any given society” (Annette & McLaughlin, 2005, p. 61). Thus, at a type of meta level of TE which perhaps is not always explicated, higher education is an arena for digital citizenship formation. Also, if digital citizenship is not addressed on this arena, this is also a type of contribution to citizenship formation but one of absence of consideration.

TE institutions form another arena for digital citizenship formation in TE, and the way TE institutions prepare student teachers for the democratic assignment in K-12 schools where teacher educators have an important role (Raiker & Rautiainen, 2020). This includes interpreting TE Degree Objectives, designing programs and courses accordingly, and considering relevant documents such as national K-12 curricula (Edling & Liljestränd, 2020), which in the case of Sweden feature digital citizenship although the term is not used explicitly (Christensen, Biseth & Huang, 2021).

A third arena for digital citizenship formation in TE is K-12 schools. This is the place for student teachers’ practical work placement, and as such it is important when it comes to their development of skills and knowledge to teach with technology (Baran et al., 2019), including teaching for digital citizenship (cf. Gudmundsdóttir & Hatlevik, 2020). K-12 schools are also the places of student teachers’ future careers. In other words, K-12 schools constitute an important arena for digital citizenship formation in TE as student teachers (and as future teachers) have opportunities to link theory and practice and gain experience. It is also a place where they will encounter school cultures and their traditions of thought and practice, which may impact the way teachers teach (or not) for digital citizenship.

These levels or arenas illustrate that when examining conceptualizations of digital citizenship in TE, citizenship formation could occur in different places and on several levels connected to TE. Certainly, this list of arenas can be problematized as it is by no means inexhaustive. For instance, if K-12 pupils are considered, further complexity is added as formal education spaces are important to citizenship formation (Beach & Öhrn, 2011) as is young people’s everyday life outside formal education (Olson et al., 2014). Another example is expanding the discussion of each arena, for instance, in what ways higher education or TE reflects a networked university and the potential implications for citizenship formation processes (cf. Nørgård et al., 2019).

Broadly, while citizenship in education has often been the focus of scholarly work, the demands placed on citizenship in a postdigital era in relation to teachers’ fostering of democratic citizens in K-12 schools call for a renewed focus on citizenship in TE, focusing on digital citizenship. This section shows that when it comes to TE, citizenship formation is complex, occurring on many levels or overlapping arenas, and these need to be considered to understand the context in which teacher educators and student teachers engage with digital citizenship conceptualizations.

Ribble and Choi’s conceptualizations of digital citizenship

The remaining sections of the paper explore Ribble’s nine elements of digital citizenship and Choi’s four-category model, examining critically how these reflect digital citizenship in a postdigital era, and the implications for TE are discussed in the concluding remarks. It is worth noting that although these conceptualizations are common in educational research, their origins differ. The theoretical and empirical grounding in Ribble’s approach is somewhat unclear and has thus drawn criticism (Heath, 2018; Noola, 2019). Choi’s conceptualization, on the other hand, stems from a concept analysis of articles, white papers, book chapters, blog posts, and websites, but this non-restrictive approach to sources materials has received criticism (Jørring et al., 2018). Below, quotation marks indicate phrases and expressions used by Ribble and Choi, which may be useful in understanding how these conceptualizations reflect a postdigital era.

Ribble's nine elements of digital citizenship

In Ribble's (2015) unidimensional approach to digital citizenship, education as a discipline impacts the aspect of digital citizenship to be foregrounded, which in this case is the norms of appropriate and responsible technology use divided into nine elements:

- Digital access
- Digital commerce
- Digital communication
- Digital literacy
- Digital etiquette
- Digital law
- Digital rights and responsibilities
- Digital health and wellness
- Digital security

These elements reflect technology use in a "digital society" characterized by interaction between technology users and emerging "opportunities" and "advantages" in social, work-related, and educational contexts. These advantages entail certain responsibilities for citizens who need to understand "the good and the bad of technology" and become citizens "of character and integrity" that can contribute as "members of a digital society" and teach others how to use technology appropriately. In education, technology is to enhance learning, and it is essential that education provides consistency in relation to digital citizenship (Ribble, 2015).

In a postdigital era, Ribble's conceptualization of digital citizenship seems narrow. Society according to Ribble is characterized by interaction between technology users. While interaction is also highlighted in a postdigital era, it is not limited to human users but blurred and broader, for instance spanning relations between human and non-human entities, the physical and the digital, and social networks, the latter shared also with NL.

Moreover, Ribble's emphasis on technology use suggests distinct boundaries between users and technology. Users use technology for certain purposes in contexts characterized by new opportunities and advantages, which indicates an optimistic, technology-determinist trajectory. This is in stark contrast with the postdigital and its multi-faceted understanding of the digital, which challenges such linear technology narratives, including the view of technology as something distinctly external with specific properties that are either "good or bad".

Similarly, Ribble conceptualizes an ideal type of citizen to become, which means that until then, one is not a "full-fledged" [sic] citizen. In digital citizenship, predefined areas such as commerce, communication, literacy, responsibilities, and health are important "starting points", which again are in contrast with the pluralism of the postdigital. Ribble's notion of an ideal citizen also seems incompatible with the traces of critical pedagogy in the postdigital. For example, there is no social-justice oriented ambition, such as examining power and communication. Rather, there are neoliberal underpinnings depoliticizing citizenship where citizens behave appropriately and responsibly, adhering to laws and regulations, focusing for instance on commerce and taking care of themselves (cf. Noula, 2019), which Ribble consistently locates to a sphere that is distinctly digital.

Choi's four categories of digital citizenship for "the internet age"

Choi's (2016) multidimensional and critical approach to digital citizenship is based on a view of society as "digitalized and networked" where "emerging digital media and web-based networking elements" enable new intra, inter, and macro perspectives on citizens' social world. Despite references in various forms to the internet (e.g., the Internet, the Internet age, internet-driven approaches to citizenship), distinctions such as "online" and "offline" are blurred in Choi's conceptualization, which covers four categories:

- Ethics
- Media and information literacy
- Participation/engagement
- Critical resistance

The ethics category broadly echoes Ribble's focus on responsibility above. Where Ribble refers to the interaction between technology users, Choi (2016) discusses Internet users who engage in "Internetworking activities". Media and information literacy refers to access to and use of digital technologies online. In this

regard, Choi’s conceptualization reflects ideas of a “digital divide” between those who have the skills, knowledge, and access to use digital technologies and those who do not, which Choi to some degree links to a critical perspective on power and politics, that is one of the categories in the model. This participation/engagement category recognizes that participation and engagement can be political directly political (e.g., engaging in discussions on social media with political parties) and indirectly (e.g., everyday actions such as reposting a meme) where the internet is a new public for participation in the form of “Internet activities”. Although hard to distinguish from participation/engagement at times, the critical resistance category in the model is about participating in “virtual communities” but linked to social justice, for instance including political activism and critically examining digital citizenship education that reinforces the status quo. Despite the emphasis on the Internet and virtual communities, Choi argues that digital citizenship is non-linear and goes beyond distinctions such as “online” and “offline”.

Compared to Ribble, Choi’s multidimensional conceptualization of digital citizenship reflects broader aspects of citizenship in a postdigital era. Society is not merely digitalized but networked, drawing on Castells as does some NL literature (cf. Jones, 2015). Instead of Ribble’s technology development narrative where digitalization of society has given rise to new rights and responsibilities, Choi describes emergent digital media, a process of change that may still be ongoing or “emerging”. The emergent digital media results in a pluralism of perspectives, which could reflect the multi-faceted understanding of digital technologies in the postdigital. A perhaps more evident, ontological reflection of the postdigital in Choi’s conceptualization is the blurredness of the online and the offline. Still, Choi’s conceptualization seems to position “users” and technology as distinct entities. Also, the role of non-human agents is unclear, which affects the degree to which Choi’s conceptualization ontologically reflects a postdigital era.

The postdigital is perhaps more strongly articulated in the intellectual roots on which Choi’s conceptualization is based. Echoing critical pedagogy, there is a social-justice oriented ambition present in Choi’s conceptualization even if it is sometimes hard to distinguish from the participation/engagement category. In other words, whereas Ribble conceives of an ideal type of citizen, Choi rejects such typologies and implicitly opens for an understanding of digital citizenship that is not confined to a specifically “digital” sphere but fluid or, using postdigital vocabulary, *blurred*. Furthermore, returning to the claim that the postdigital is limited to formal education compared to NL (NLEC, 2021), Choi’s conceptualization includes both formal and informal spaces for citizenship formation and thus seems compatible with the postdigital in this regard. However, the links to formal and informal spaces reflect an emphasis on activities relating to political participation rather than critical resistance, for example, against the status quo.

Thus, while Ribble’s and Choi’s conceptualizations of digital citizenship share the focus on ethics, they diverge in many ways. Some of the examples are summarized in the table below.

Table 1: Digital citizenship in Ribble (2015) and Choi (2016)

	Ribble’s nine elements	Choi’s four-category model
Society	Digital	Digitalized, networked
Citizen typology	Yes	No
Technology	Used by humans Linear trajectory Distinct boundaries (e.g., “good”, “online”)	Used by humans Emergent, multi-faceted Non-linear digital citizenship, tendency toward blurred boundaries
Context	Social, work, and educational contexts Formal spaces	Social (intra, inter, macro) Formal and informal spaces
Critical, social justice	No	Yes
Critique(s)	Lacking explicit consideration for interaction between humans, non-human entities, networks Technology-determinist Not “full” citizen by default Citizenship to be achieved in line with neoliberal underpinnings	Lacking explicit consideration for role of non-human entities

Concluding remarks

The purpose of this paper was to explore two conceptualizations of digital citizenship common in educational research, namely Ribble's nine elements and Choi's four-category model, and examine critically how these conceptualizations reflect the demands placed on citizenship in a postdigital era, including potential implications for TE. This is important as teacher educators play a key role in preparing future teachers for the fostering of democratic citizens in K-12 schools (Raiker & Rautiainen, 2020) and, as education is to be based on scientific grounds, teacher educators (including student teachers and in-service teachers) look to educational research for support.

This paper highlights that when examining conceptualizations of digital citizenship in TE, citizenship formation may occur on several levels or "arenas" which are important to consider: higher education broadly as places for engaging with traditions of thought and developing resources for citizenship, TE institutions as places for interpreting TE Degree Objectives and designing TE programs to prepare student teachers for the fostering of democratic citizens, and TE in relation to K-12 schools as places for student teachers' practical work placement and future careers. Considering these arenas is important to understand the context in which teacher educators and student teachers engage with digital citizenship conceptualizations, which may impact future teachers' preparation to teach for digital citizenship in a postdigital era.

As to the conceptualizations, the paper shows that Ribble's unidimensional conceptualization of digital citizenship does not reflect a postdigital era but in fact is incompatible. Reflecting technology determinism, Ribble attributes properties to technology in ways that are value-laden where citizens are propelled by technology into the future along a specific trajectory, and to become "full" citizens, people need to use technology in specific ways, which demands levels of conformity (Noula, 2019). In TE, such an approach could result in teacher training that does not aptly consider the embeddedness of digital technologies in society (cf. Knox, 2019) and a limited conceptual scope of digital citizenship with which student teachers engage. Consequently, this could impact future pupils' citizenship formation.

In contrast, Choi's multidimensional conceptualization accommodates more aspects of digital citizenship by going beyond ethics, including media and information literacy, civic engagement, and critical approaches to digital citizenship. As opposed to Ribble's "citizen-to-become", Choi rejects the notion of an ideal type of citizen. Moreover, echoing the influence of critical pedagogy in the postdigital (Jandrić, 2021), Choi's conceptualization includes elements of social justice. Choi also hints at a multi-faceted understanding of digital technologies, including entanglement of humans, technologies and a plurality of ways in which people and their social world are impacted. In this regard, Choi echoes some concepts central also to NL, such as entanglement and the outlook on society as networked. This could also be interpreted as a postdigital blurredness between the digital, the physical, and social networks, which is reflected for instance by the emphasis on how digital citizenship is "interrelated but non-linear with offline (place-based) civic lives" (Choi, 2016, p. 565). However, it is unclear how Choi views other aspects of the postdigital, for instance relations between human and non-human entities. In relation to TE, Choi's conceptualization still has the potential to reflect digital citizenship in a postdigital era, its conceptual scope is larger, and it does not demand conformity but strives to challenge it. A likely consequence is that student teachers engaging with Choi's conceptualization would be prepared to teach for digital citizenship in ways that reflect the core meanings of the Swedish K-12 curricula to a larger degree than if they had adopted Ribble's conceptualization of digital citizenship.

In conclusion, neither of these conceptualizations can be said to reflect a postdigital era although Choi's four-category model has potential, which is important if the ambition is to discuss education in ways that consider the embeddedness of digital technologies in society. Critically examining conceptualizations of digital citizenship is also important as the implications of engaging with different conceptualizations are quite different (Heath, 2018; Jørring et al., 2018; Noula, 2019). This paper contributes to the literature by focusing on how conceptualizations of digital citizenship in TE can impact future teachers' preparation to teach for digital citizenship in a postdigital era, and it stresses the importance that teacher educators' (and teachers') practices be informed in the context of digital citizenship. In this regard, the paper can contribute to informing NL design and practices, highlighting the role of active teacher educators and teachers who act in deliberate ways, for instance to challenge narrow conceptualizations of digital citizenship.

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